Commercial and Industrial Meeting One: Technology Topics
Friday February 6th, 2015
9:00 AM – 1:00 PM
Saltonstall Building, Second Floor, Room A
100 Cambridge Street, Boston

Draft Meeting Summary

Forty people attended this workshop (see attachment #1). The background material and the presentations can be found at http://ma-eeac.org/ci-workshop-1-january-27-2015-meeting-materials/

INTRODUCTION, CONTEXT SUMMARY, AND WORKSHOP OVERVIEW

Dr. Jonathan Raab, facilitator from Raab Associates, welcomed the group to the commercial and industrial (C&I) technology topics meeting and reviewed the meeting agenda. He listed the four technology topics of the meeting: combined heat and power (CHP), retro-commissioning (RC_X), controls, and sub-metering and noted that the approach to each topic would include a brief presentation of the technology, time for clarifying questions, a discussion of the material, and councilor recommendations for next steps. Dr. Raab then outlined the ground rules for the meeting and reviewed the schedule and topics for the two remaining C&I EEAC workshops, emphasizing that the focus of the third workshop could be tailored in part based on the topics discussed during the first two sessions. Dr. Raab and Tina Halfpenny, Energy Efficiency Director at Massachusetts Department of Energy Resources, explained that the report out from the workshops would inform the EEAC's decision process on drafting resolutions, which will be issued in late March.

Alex Pollard, Energy Efficiency Commercial Programs Manager at Massachusetts Department of Energy Resources, provided an overview and context briefing of C&I energy efficiency in Massachusetts. He reminded the workshop participants that ACEEE ranks Massachusetts first in the nation for its energy efficiency programs. He then reviewed the growth, goals, and results of Massachusetts' gas and electric C&I programs and initiatives by sector and technology type. Mr. Pollard also highlighted market changes since the last three-year plan (3YP), explained main points of the latest EM&V results, and walked the group through reporting in the C&I sector.

The councilors provided the following opening question. *Responses are in italics.*

- Will the group discuss demand savings, particularly capacity/demand reduction? It is an important topic. *Councilors highlighted this issue as an important subject for discussion. Since the topics for the third C&I workshop are still in review, demand savings could be discussed then. The four topics focused on today were prioritized in the December workshop.*

COMBINED HEAT AND POWER

Presentation

Thomas Palma, Unitil, reviewed CHP technology, providing a background on the issue and laying out potential CHP opportunities for the Commonwealth.

Clarifying Questions

The group provided the following clarifying questions and comments about CHP. *Responses are in italics.*

- Do CHP operators evaluate how much heat is needed and then decide on a system, given that the demand is based on thermal requirements?
    - *When installing a CHP system, operators consider both load profile for heat and electricity, but to be included in efficiency programs, CHP systems must be heat led for efficiency, and thus should not exceed the heat load.*
- CHP systems can be run with compressed natural gas. This may be an overlooked opportunity.
    - *CHP can use any fuel, even wood, but customers typically look primarily at natural gas since it is cheaper per therm. However, from the PA perspective, the fuel source does not matter.*
- The current statewide CHP capacity is 458 megawatts (MW).
- Does the stated 6000-hour minimum heating/cooling rule to achieve energy efficiency goals hold regardless of system size? Could larger systems increase economic efficiency?
    - *Operators consider a system's profile over the whole year, and a 3000-hour system, for example, would not be efficient from a simple payback perspective. CHP systems are sized from base kilowatt load initially and then the sizes are dropped based off of thermal utilization.*
- *What if an operator needs heat for short period loads?*
    - *Operators need to meet the 6000-hour thermal threshold for efficiency. CHP systems can also be used for cooling with an absorption cooling system, which requires specialized equipment. CHP projects are fairly site-specific and depend on customers' needs.*
- On page 8 of the technology briefing, it states there are energy efficiency savings for CHP but total gas consumption can increase. Can you explain this?
    - *If natural gas is used as the fuel for CHP, those CHP systems will increase gas use on site. But at a system-wide basis, less gas is used because the system-wide losses associated with gas-powered electricity generation at a remote site are avoided. Overall, 90% of systems have net negative gas savings (i.e., gas savings).*

    - CLARIFICATION: To qualify for the energy efficiency programs and receive incentives, CHP must achieve net gas savings. Additionally, depending upon the type of fuel used, CHP installations may qualify for the Massachusetts Alternative or Renewable Portfolio Standards.[1]
- If the installed CHP capacity is 458 MW, this implies there is a system gap of approximately 1,350 MW. Does this meet the economic criteria for incentive programs?
    - *This is simply an analysis stating that there is a potential to run more KW of cost-effective CHP.*
- Did the study in the briefing identify the potential to operate more CHP systems on site-by-site basis or is it a top down approximation?
    - *We will look at the specific study that provided the CHP potential data to answer this question.*
    - CLARIFICATION: This study[2] used a top down approximation to develop a potential for CHP depending upon the estimated payback periods for different CHP plant sizes in various commercial, institutional and industrial market segments through 2026.

Discussion

The Councilors gave the following comments about CHP (loosely related the questions posed in briefing documents, organized by the following sub-topics.

Cost and Cost-Effectiveness of CHP

- Operators who are considering installing CHP systems often have problems calculating the payback given the uncertainty of future electricity prices. Conducting a sensitivity analysis and projecting future fuel prices could be helpful for resolving this problem, especially if the results of this work were made easily available to customers.
- While there is little insight into this particular cost/benefit model, fuel projections could be modeled for a 15 to 20 year time horizon.
- Since electricity is currently largely produced from natural gas in Massachusetts, there is an inherent relationship in which the cost of electricity tracks that of natural gas.
- System operators conduct back of the envelope calculations on CHP payback and determine it is not worth the cost. They do not call in experts who could show that CHP does have a positive payback potential in appropriate systems.
- The biggest problem with CHP is lack of customer education and lack of time to fully investigate the technology.

Environmental Permitting Related to CHP

[1] http://www.mass.gov/eaea/energy-utilities-clean-tech/renewable-energy/rps-aps/rps-aps-sqa/

[2] http://ceeep.rutgers.edu/wp-content/uploads/2013/11/CombinedHeatKEMA2008.pdf

- The briefing mentions environmental permitting requirements. Are there specific permitting concerns customers have encountered? Perhaps, DEP could put out information about the CHP size requirements for permitting standards.

CHP and Gas Price Volatility/Uncertainty/Availability

- It is important to look at the rate and level of CHP installation in Massachusetts in context. 400 MW has been installed over eighteen years, which is roughly 30 MW annually. This is a fairly slow rate of installation. As mentioned, customers are concerned about price risks associated with volatile natural gas prices. How can we build risk mitigation considerations for natural gas prices into CHP programs? We should further study this issue and provide better installation incentives and education.
- Given issues with natural gas supply on Cape Cod, it is unlikely that many natural gas-fired CHP systems could be installed there within the timeframe of the next 3YP.
- Berkshire Gas also has a moratorium on natural gas expansion in the Greenfield area.

EE Program Incentives and Design/Goal-Setting Issues for CHP

- CHP seems to offer a good deal of potential to customers and for energy efficiency, but I am uncertain about how we are incentivizing it and if we are ramping up CHP installation efforts. CHP could be attractive to businesses as a hedge factor, if we mitigate the risk factor through appropriate incentives and have project engineers explain fuel prices to potential customers.
- As of now, CHP is treated like most other technologies: Up to 150 KW, there is a prescriptive schedule of rebates with extra money available if customers install other efficiency measures as well, and the Program Administrator negotiates rebates for projects over 150 KW. The Efficiency Programs look to buy down the initial costs to encourage the installation of CHP units but does not have an insurance-like policy. As CHP systems are more risky than other energy efficiency projects, a third party installer model could mitigate risks of price volatility.
- PAs can lose energy efficiency incentives if CHP installation processes go over a 3YP's timeframe. We should consider how to amend this issue to encourage CHP projects.
- There could be an advantage to prepackaged CHP systems that are less customized but more replicable. This could create a standardized system for smaller customers. It is a feasible idea.
- There is still a rule that boilers of a certain size need an operator. Thus, designs need to focus on systems that do not require an operator, as this is a major limitation to mid-size units, since it is expensive to hire a full time staff member.
- We should target smaller systems that would not require a boiler operator.
- Certain size plants already have this staffing capacity available for CHP systems.
- CHP systems differ from lighting because they have set maintenance schedules. Maintenance costs needs to be built into CHP operating costs, and customers need to understand the complexity of the systems upfront.

- Could CHP be tracked internally, without setting formal goals or making it an initiative, to provide more insight to the Council?
- CHP relates to geo-targeting, which could be a potential target in the third C&I workshop.

Need for CHP Related Education

- CHP systems are complex, and customers need education. University of Massachusetts-Amherst's Industrial Assessment Center has dedicated staff to lead this outreach, which has proved instrumental in developing CHP projects, along with incentives.

Interconnection Issues

- Boston is interested in promoting more CHP and would like to connect distributed generation in general throughout the downtown area network.
- The method of connecting into a system is important. Boston's multiple spot networks could become safety considerations for electrical workers.
- There are cities in the United States that have made more progress on connecting area networks. Promoting technology transfers could be important. We should consider looking into other jurisdictions that have successfully connected spot networks and gather more information.

Legislative Barriers

- As a councilor, it is frustrating that regulations can block CHP projects. I would like more information on existing legislative barriers to know if there are regulations that need to be updated.
- This is a good point, and we should further consider legislative barriers to all the meeting's highlighted technologies.

<u>Recommendations</u>

The councilors provided the following recommendations and next steps for CHP:

1. Overall seek ways to increase CHP installations in Massachusetts
2. Reassess the CHP economic potential in Massachusetts (Note: Last assessment was done circa 2008]
3. Pursue following next steps:
    a. Identify barriers to doing more CHP projects with customers of each size, and determine if the barriers are technical, policy, financial, legislative, or market issues. Some identified barriers include:
        i. Education
        ii. Interconnection issues
        iii. Gas supply constraints and gas price volatility
    b. Identify potential solutions to overcome the identified barriers, and determine the feasibility, costs and ability of the Program Administrators to implement the solutions.

c. Investigate the challenges posed by natural gas availability and volatility in fuel prices for installing CHP systems and potential programmatic approaches to mitigating those risks
d. Also, continue to seek ways to install CHP safely on downtown networks

4. Enhance education campaign for CHP technology, including cost-effectiveness and the (DEP) permitting process when applicable
5. Evaluate whether CHP should be a stand alone initiative for reporting purposes

All voting councilors supported the recommendations. The PAs largely agreed with the recommendations, with one PA commenting that having separate CHP goals could prove difficult and it might be better to continue to have CHP as an integrated EE measure rather than a stand-alone initiative. Others clarified that CHP could be a stand-alone initiative but might not have its own energy efficiency goal, but the group would first need to decide what such an initiative would look like and evaluate its impacts before implementing it.

RETRO-COMMISSIONING

Presentation

Jennifer Chiodo, EEAC Consultant from C_X Associates, provided a background on Retrocommissioning (RC_X) in Massachusetts and explained opportunities for the technology.

Clarifying Questions

Councilors provided the following clarifying questions and comments about RC_X. *Responses are in italics.*

- How can we effectively deal with building automation systems, since they cannot be measured? The prize in RC_X is continuous commissioning, so we need to determine how to turn one-time RC_X projects into longer-term projects to achieve a quality volume of savings instead of a one-time, temporary improvement.
    - *There are components of RC_X that go beyond behavior. RC_X projects find problems like broken actuators that stay fixed at the end of the project. In addition, building controls and performance metrics with alarms can alert an operator if these fixes later fail. One recommendation is baselining equipment, which can involve metering, to help monitor efficiency performance. Some projects already include metering as a pre-installation measure.*
- Do customers typically install energy management systems (EMS) after RC_X and metering?
    - *RC_X is normally done on buildings that already have EMS and helps a building's systems optimally function together.*

- It seems like RC_X controls, and sub-metering are all tied together.
    - *They are closely related and affect one another but also have important differences.*
- On page 11, the briefing states that the implementation of the second RC_X program available to larger customers across the state "may vary". I would like to know if it does vary. In addition, the next paragraph mentions a RC_X engineering study which developed recommendations but does not spell out which recommendations were implemented. More information on these topics could help the councilors make recommendations. It also states in the footnote at the bottom of page 11 that the healthcare sector was not discussed. Why is this?
    - *Hospital RC_X does incorporate a number of the listed measures. Starting this year, there is a RC_X initiative targeted at healthcare facilities based off of results from baseline studies. The Efficiency Programs are fairly proactive in this sector in terms of RC_X and will learn more from the initiative as it progresses. Moreover, RC_X is a long-term energy efficiency measure that requires a huge mobilization of technology and engineering resources, training, and customer investment, so fine-tuning the approach will be a long-term exercise. RC_X will also require dynamic market development efforts.*
- What size customers are the Efficiency Programs targeting? Also, I like the idea of the walkthrough evaluations. Do these walkthroughs capture the interest of the customer by resulting in a report showing how much money they could save through RC_X?
    - *RC_X applies to buildings that already have automated controls, so we look for customers who have these systems in place. The walkthroughs result in a short phase one study that shows customers what they could save and what RC_X would cost. Phase two studies go into more detail by identifying every control opportunity in the system, showing the cost of implementation, and savings.*
- Is there a RC_X market for customers without automated building systems?
    - *This type of RC_X tends to be labor intensive and has limited back end benefits. That is why the efficiency programs focus on automated systems, buildings above 100,000 square feet, and complex end results.*
- How does RC_X fit into an efficiency plan in which everything else involves measure level savings? How can the real time performance of RC_X be monitored? It seems like RC_X might make more sense when a private company is bound to a customer by a performance contract in which it needs to demonstrate energy savings.
    - *RC_X is a process of how a customer is operating pieces of equipment and using equipment more efficiently.*
- How does a customer measure it, and how do PAs get credit for RC_X?

- *For C&I, only half of savings are deemed savings; the other half involves customer analysis measures. In addition, monitoring is conducted at a program level, with a significant portion of savings attributed to customer analysis. PAs can have required baseline measurements and post-installation conditions, with evaluations assessing persistence to ensure RC_X savings endure.*

Discussion

The Councilors gave the following comments about RC_X.

- Monitoring should be an important component of RC_X to ensure energy efficiency savings are maintained. A holistic program with RC_X, controls, and sub-metering would address PA concerns and ensure savings are maintained.
- RC_X persistence is a key issue. PAs assume RC_X has a two-year measure life and incentives are based on this assumption, so there are fewer incentives to implement RC_X projects than install other measure types. Incentives to encourage continued monitoring of RC_X projects to extend the measure life should be created.
  - *RC_X has a 5-year measure life. RC_X is hindered by the lack of properly training operators to efficiently run buildings' systems. There is not enough time devoted to staff training.*
- We should try to focus more on building operator training and determine if there are avenues for better or more specific RC_X training.
- I agree that we should look into training programs for public and private building operators. Initiatives, such as benchmarking, that allow customers to see whether they need energy efficiency help should be incentivized. For example, MassEnergyInsight [3], an energy-tracking database used by Massachusetts municipalities and public entities, determined that a particular school used a high amount of energy through benchmarking.
- The Efficiency Programs should carefully evaluate the initial certification of new construction programs to ensure that energy efficiency measures are installed correctly initially and should tie incentives to continuous commissioning.
- The Efficiency Programs need a different financial structure, such as moving more incentives to MBCx, to improve the persistence of savings.
- RC_X projects need a baseline measurement and changes in the system must be modeled, both of which require specialized expertise. However, there are a limited number of experts with this skillset, so the Efficiency Programs need to investigate how to support more on the ground RC_X experts.
- Smaller PAs can have staff turnover issues, which creates problems of retaining RC_X expertise.

[3] http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/massenergyinsight.html

- Given recent improvements in technology and fault detection, it could be possible to hire one staff member to monitor many buildings and alert a contractor if fault alarm triggers in a specific building.
- Over the last several years, there have been incentives in place for customers who go beyond standard RC_X measures and baselines requirements. There is also a performance based RC_X program. These programs help encourage additional monitoring. Since cost is a major barrier to RC_X, RC_X programs need to be made more cost-effective.
- There was concern about buildings with no EMS in place. What percentage of building fall into this category, and how are the Efficiency Programs dealing with them?
    - *Larger buildings tend to have automated systems for heating, cooling, and ventilation. Older buildings use less electricity on average, since newer buildings with complex EMS often have the most system faults, and are thus the target of RC_X programs. Other buildings can enter into other programs, including lighting replacement.*
- RC_X is not an ideal candidate for performance contracting, since the profit margins are not large enough.
- By 2018, every building will have a building management system. The technology is rapidly evolving, so it is difficult to define the available opportunities. Educating operators and customers about the changes in the technology will be important. There will also be increased opportunities for building analytic programs.

Recommendations – are combined with building controls and submetering and are presented on pages 12-13.

BUILDING CONTROLS

Presentation

George Lawrence, EEAC Consultant from Optimal Energy, provided a general background on building and lighting control systems and highlighting emerging opportunities for the technology.

Clarifying Questions

There were no clarifying questions provided regarding control systems.

Discussion

The Councilors provided the following comments about control systems.

- Control technology is quickly improving, so we need to anticipate this change and be forward thinking to ensure the 3YP includes and accommodates new technologies.
- Since technology is rapidly advancing, we need to set guidelines rather than specifics.
    - *The 3YP will include more general guidelines along with some specifics.*
- EISA affects overall net savings of lighting retrofits by changing the baseline. When developing a coincidence factor during a lighting program evaluation, where does a customer credit the value of the efficiency measure with lighting control? Can you change the way systems are credited, and is there a difference between process and equipment credits?
    - *Systems can be quantified to prevent double claiming of energy savings. When lights are on, customers claim light efficiency savings and, when lights are off, claim control savings.*
- If costs and benefits have already been credited to a lighting system, it could be difficult to implement a control system and measure savings. There needs to be a way to easily get credit for both measures.
    - *There are normally savings associated with more efficient light bulbs, and control savings are stacked on top of these.*
- Fixture-embedded control systems also address this quantification issue and also integrate additional potential energy savings such as occupancy-sensored ventilation.
- All new buildings now include control systems. We should not use our funds to incentive people to install systems that are the standard practice. It is akin to incentivizing projects that are below code.
- There are opportunities to incentive projects that go beyond the code to achieve additional savings through initiatives like continuous monitoring.
    - *Yes, and we will focus on behavioral programs thoroughly at a later workshop.*
- Education programs, through mediums like webinars, that teach the commercial sector about new technologies, especially lighting controls, could be an important first step.
    - *There are commercial case studies on the Mass Save Website, but these are somewhat limited and static.*
- The Mass Save PAs have a new web vendor who will make energy efficiency context searchable by a number of different indexes. In addition, we already run webinars, attend conferences, work with green communities and municipalities, and conduct a number of other education and outreach measures.

Recommendations – are combined with building controls and submetering and are presented on pages 12-13.

SUB-METERING

Presentation

Nelson Medeiros, Eversource Energy, provided a background on sub-metering and listed opportunities for using the technology to achieve additional energy efficiency savings.

Clarifying Questions

Councilors provided the following clarifying questions and comments about sub-metering. *Responses are in italics.*

- Are sub-meters provided by utilities, or do customers purchase them?
    - *Customers normally buy them when they are used permanently. Some meters provide additional functionality, including system analysis and adjustment. The PAs use submetering to determine a baseline for RCx projects.*
- Do meters need to be revenue grade?
    - *Meters do no need to be revenue grade. Sub-meters alone do not achieve energy savings. Their use requires follow-up action based on the collected information and data analytics. It makes sense to marry this data with the control systems that use it to allow the systems to automatically revise operations.*

Discussion

Councilors provided the following comments about sub-metering. *Responses are in italics.*

- Some companies have hundreds of sub-meters tied to controls, and operators can run the plant from their home computers. This is relatively inexpensive. There should be incentives tied to sub-meter installation.
    - *We need to ensure that the information required from customers is in-line with implemented measures, so customers can invest in the most cost effective measures for their facilities.*
- If we incentive sub-metering, it should be based on a standard rebate, like thermostats.
    - *Right now sub-metering is incentivized through a performance-based commercial program. If customers report data from sub-meters, they receive an incentive. We provide higher incentives during the first year to offset the upfront costs.*
- Sub-metering could be tied to peak loads, since no customer wants to hit the peak load.
- Sub-metering can be paired with RC_X to obtain performance metrics and determine potential energy efficiency measures.

- Sub-metering monitoring for commercial and industrial sectors may be different: industrial sites may need a site-specific operator and may want to hide their data, while commercial customers could share one operator among them.
- DOER installed a large sub-metering system before the pay for performance standards. While it had access to a great deal of data, it did not have enough energy managers to act on the results. There is a cost to sub-metering, especially thermal monitoring. Thus, an incentive structure should couple sub-meter installation with funding for staffing.
- While facility managers do get inundated with a great deal of data, building metrics can aggregate data into a few useful and accessible data points.
- In addition to custom sub-meter programs, holistic incentive packages could be created. Sub-meter incentives also do not necessarily need to be tied directly to energy savings. Energy audits, for example, are incentivized but do not directly result in energy savings.
    - *Customers might be required to collect a certain level of data to inform energy efficiency measures.*
- PAs can spend one-percent of their budget on pilot programs that do not need to generate savings. This could create a space for piloting these innovatine and emerging technologies (submetering, RCx, advanced building controls). We cannot afford to delay implementing these new technologies. The 'piloting' funds were not fully taken advantage of in the commercial sector during the last 3YP.
- Piloting RC_X, control, and sub-metering projects together would also remove PA and customer risk and produce example cases that could raise interest in other customers.
- Building analytics, including evaluating targeting, should also play a part in pilot programs.

COMBINED RECOMMENDATIONS FOR RETRO-COMMISSIONING/BUILDING & LIGHTING CONTROLS/SUB-METERING

<u>Recommendations</u>

The councilors provided the following recommendations and next steps for RCX, control systems, and sub-metering:

1. Overall endeavor to scale-up RCx, controls, and sub-metering initiatives in Massachusetts beyond PAs' current programs
2. Seek ways to transform RCX into a continuous commissioning process by using appropriate incentives, promoting new technologies, and training system operators
3. Consider how to include continuous commissioning as part of the new construction program
4. Investigate ways to use benchmarking to identify ideal RCx candidate projects

5. Continue to incentivize new building automation and lighting controls that exceed building codes and standard practices
6. Decide on guidelines to facilitate and incentivize a more rapid and nimble adoption of emerging new technologies
7. Educate customers and vendors about new technologies, particularly through accessible formats, like webinars and videos (including searchable C&I case studies on the Mass Save website)
8. Promote open architecture in control systems to facilitate simpler system upgrading
9. Update building operator training offerings
10. Consider using pilot programs to test new and innovative technologies or program delivery approaches in the areas of submetering, RCx, and advanced building controls.

Discussion of Recommendations

The Councilors and participants gave the following comments following the recommendations.

- We [PAs] do many of these actions already and support doing even more. We have also performed a great deal of data analytics and studied the quality of our program outcomes compared to standard engineering practices. We use this information for targeting in conjunction with the National Renewable Energy Lab. There is a great deal of activity happening, and a challenge is providing verifiable, cost-effective savings.
    - *There could be a need to develop better ways to verify savings generated from PA activities.*
- Pilot programs have no claimed savings associated with them.
    - *Pilots can roll into programs for claimed savings if they are successful and prove cost-effective.*
- It could be helpful if PAs collaborate on pilot projects and have the reports evaluated in the first year of the next 3YP so that any modification could be included in the mid-term modifications.
- I am impressed with National Grid's efforts. What could the council do to help your energy efficiency efforts?
    - California has the California Technical Forum that receives millions of dollars in funding for researching new technologies. Funding a similar program in the Commonwealth would be beneficial.
- There are market limits on the number of qualified BAS installers/programmers.
- We need to investigate the connections among buildings, people, and data to evaluate how to engage systems and people to increase cooperation and interconnections.
- BAS systems are not user intuitive. We should invite BAS vendors to the table to encourage the development of more intuitive systems.

NEXT STEPS/WRAP UP

Dr. Raab thanked the group for its input and asked the councilors to advise him on what worked well during the meeting and what could be improved upon to increase the efficacy of later meetings.

Participants listed positive aspects of the meeting, including:

- Dr. Raab's careful control of the conversation and time
- Receiving the briefing materials before the meeting, which helped move the conversation along and provided useful summaries of the topics
- Dr. Raab's summaries of the group's recommendations and allowing time for conversation about whether the recommendations are feasible
- The sound system

Participants also noted aspects of the session that could be changed to improve future workshops, including:

- Providing food and drinks
- Allowing for longer breaks and/or a lunch period
- Visually displaying the recommendations

Mr. Pollard thanked the group for the discussion and reminded the participants that the topics for the third C&I workshop are still in development. Dr. Raab asked the group to read the briefing material before the next meeting and told public attendants that they could sends comments to Mr. Pollard for circulation to provide feedback on the topics.

ACTION ITEMS

The following action items were captured during the meeting:

<u>EEAC Consultants</u>

- Revise page eight of the technology briefing to clarify the relationship between CHP net negative gas savings and increased gas use by some individual CHP systems.
- Review the study focusing on the capacity for additional CHP in Massachusetts to determine how it developed its data and recommendation.
- Send workshop report to the EEAC to inform resolutions drafting

<u>EEAC Councilors</u>

- Read background briefing before the second workshop and come prepared to respond to the discussion questions

<u>Public Participants</u>

- Read background briefing, and welcome to send comments and feedback to Mr. Pollard for possible circulation (since not time during the workshops for their input)

Raab Associates

- Prepare meeting summary for this workshop, and agenda for next

Attachment A
February 6, 2015 – EEAC C&I Workshop Attendance

Last Name	First Name	Company
Baston	Doug	North Atlantic Energy Advisors
Belden	Andy	Meister Consultants Group
Boecke	Donald	Attorney General's Office
Boucher	Francis	Boucher Energy Systems
Breslow	Marc	Climate XChange
Buchler	Derek	FirstFuel Software
Buno	Jessica	Keegan Werlin LLP
Chiodo	Jennifer	Cx Associates
Chretien	Larry	Mass Energy Consumers Alliance
Cohen	Arielle	National Consumer Law Center
Downey	Maggie	Cape Light Compact
Dragoo	Kim	ICF International
Eckstein	Sarah	ERS
Gibbons	David	National Grid
Gromer	Paul	Peregrine Energy Group
Hanover	Jodi	Rich May, P.C.
Jennings	Adam	Eversource
Johnson	Paul	Greentek
Kulkarni	Amit	National Grid
Lawrence	George	Optimal Energy
Lipke	Paul	Health Care Without Harm
Malmstrom	Rick	Harvard
McCarey	Maggie	MA DOER
McCarthy	Ezra	National Grid
Medeiros	Nelson	Eversource
Mellen	Erik	Eversource
Miller	Meredith B	Cape Light Compact
Palma	Thomas	Unitil
Patton	Marlana	Peregrine Energy Group
Pollard	Alex	MA DOER
Powelka	Aimee	Less than 99
Rio	Bob	AIM
Ruberti	James	Eversource
Smith	Griffin	Consensus Building Institute
Spencer	Lawrence	MA DOER
Swing	Bradford	City of Boston
Venezia	Steve	MA DOER
Weber	Sharon	Mass DEP
Whitman	Austin	FirstFuel Software, Inc.
Winkler	Eric	ISO New England